# INVESTIGATOR'S ANNUAL REPORT

**National Park Service**

**All or some of the information provided may be available to the public**

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| **Reporting Year:**<br>1995 | **Park:**<br>Shenandoah NP |
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**Additional investigators or key field assistants (first name, last name, office phone, office email):**

No co-investigators

**Permit#:**
SHEN1995ANNX

**Park-assigned Study Id. #:**
unknown

**Project Title:**
Bird Monitoring: Monitoring Avian Productivity And Survivorship (Maps) In Shenandoah National Park

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| **Permit Start Date:**<br>Jan 01, 1998 | **Permit Expiration Date**<br>Jan 01, 1998 |
| **Study Start Date:**<br>Jan 01, 1992 | **Study End Date**<br>Jan 01, 1997 |

**Study Status:**
Completed

**Activity Type:**
Other

**Subject/Discipline:**
Birds / Ornithology

**Objectives:**

The major objective is to monitor the primary demographic parameters of landbirds in Shenandoah National Park. Specific objectives are: (1) To establish and operate six MAPS stations in Shenandoah National Park for at least five consecutive years; (2) to provide annual indices of adult population size and post-fledging productivity from data on the numbers of young and adult birds captured; (3) to provide, for the first four years of the program, additional independent indices of adult population size from point-count data collected at the MAPS stations; and (4) to provide, after at least three years of data have been collected, annual estimates of adult survivorship and adult recapture probabilities from modified Cormack-Jolly-Seber mark-recapture analyses.

**Findings and Status:**

A total of 1,174 birds was banded at the six MAPS stations in Shenandoah National Park during 1995, 358 between- and within- season recaptures were recorded, and 52 birds were released unbanded, making a total of 1,584 captures of 48 species. As in 1993 and 1994, the capture rates of adult birds (a measure of adult population size) tended to be higher at stations located in northern red oak than in chestnut oak habitat. Indices of adult population size derived from capture data were highly significantly correlated with analagous indices derived from point-count data at each of the six stations. Analyses of constant-effort data indicated that adult population size and post-fledging productivity remained relatively constant from 1994 to 1995 for most species, although eight species showed significant decreases in adult population size and four species showed significant increases and two species significant decreases in post-fledging productivity. For each of eight target species, estimates of adult survivorship obtained from four years of data from two stations were more precise than estimates obtained from three years of data from six stations, emphasizing the importance of long-term data for estimating survival rates. We evaluated several mark-recapture models and used the Akaike Information Criterion to select the model that best fit the available data. A model of constant (over time) survival and recapture probabilities was selected over all time- dependent models for each of eight target species, indicating that four years of data from only two stations was insufficient to identify year effects in survival and recapture rates. Similarly, a non-transient model (which assumes that the proportion of resident individuals among newly captured birds is 1.0) was selected over a transient model for all eight target species, indicating that four years of data from only two stations was insufficient to detect the existence of transient individuals. Estimates of adult survivorship from the two stations operated for four years were surprisingly high, suggesting that, in fact, very few transients may occur at these stations. This is reasonable in that both of these stations were located at relatively high elevations where the passage of transient adults may be limited, at least during spring and early summer. These analyses provide a strong indication that relatively precise and extremely useful indices

and estimates of primary demographic parameters will be available from the MAPS Program in Shenandoah National Park when additional years of data from all six stations are obtained.

**For this study, were one or more specimens collected and removed from the park but not destroyed during analyses?**

No

| **Funding provided this reporting year by NPS:** | **Funding provided this reporting year by other sources:** |
|---|---|
| 16657 | 0 |

**Fill out the following ONLY IF the National Park Service supported this project in this reporting year by providing money to a university or college**

| **Full name of college or university:** | **Annual funding provided by NPS to university or college this reporting year:** |
|---|---|
| n/a | 0 |